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## **Perceived helpfulness of eWOM: emotions, fairness and rationality**

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### **Abstract**

Consumers use online reviews to help make informed purchase decisions. This paper extends existing research by examining how content of online reviews influences perceptions of helpfulness by demonstrating how different emotions can influence helpfulness of both product and service online reviews beyond a valence-based approach using cognitive appraisal theory and attribution theory. This research contributes to existing knowledge regarding the theory of information processing, attribution theory, and cognitive appraisal theory of emotions. Using findings from this study, practitioners can make review websites more user-friendly which will help readers avoid information overload and make more informed purchase decisions.

**Keywords** Online review; Helpfulness; Negative emotions.

## 1. Introduction

The development of Internet technologies and popularity of e-commerce has prompted electronic word-of-mouth (eWOM) communications, such as online reviews, to become a key source of information about products and services. Today, consumers have access to more reviews of products and services from varying sources than ever before; to pinpoint just two examples, there are now more than 630 million online reviews on TripAdvisor (TripAdvisor, 2018) and more than 155 million on Yelp (Yelp, 2018). The ubiquity of online reviews means it must be an important consideration for enterprises of all sizes regardless of whether they sell directly online.

eWOM is defined as “the dynamic and ongoing information exchange process between potential, actual, or former consumers regarding a product, service, brand or company, which is available to a multitude of people and institutions via the Internet” (Ismagilova et al., 2017, p.18). Studies have found positive relationships between eWOM and information adoption (Chang & Wu, 2014; Wang et al., 2015), change in attitude (Hsu et al., 2013; Huang & Korfiatis, 2015; Martin & Lueg, 2013; Pan & Chiou, 2011; Shareef et al., 2018), purchase intention (Bi et al., 2017; Chen et al., 2016; Hernandez & Handan, 2014; Pappas, 2016; Pereira et al., 2016; Plotkina & Munzel, 2016; Pookulangara & Koesler, 2011; Sweeney et al., 2014; Weisstein et al., 2017) and sales of products/services (Blal & Sturman, 2014; Cadario, 2014; Eslami & Ghasemaghaei, 2018; Lee et al., 2011). However, information overload from vast quantities of eWOM can cause confusion and result in a negative effect on purchase intention (Furner & Zinko, 2017; Singh et al., 2017). To limit the negative effects of information overload, online vendors should provide tools for consumers to identify helpful reviews readily (Peng et al., 2014; Singh et al., 2017).

The importance of emotions in the decision-making process has been recognised by researchers for some time (e.g. Ahmad & Laroche, 2015; Kim & Gupta, 2012; Lerner & Keltner, 2000; Srivastava et al., 2008). Previous studies have found significant relationships between emotions expressed in online reviews and perceived helpfulness of those reviews in assisting decisions (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014). However, to date, research has tended to focus on positive discrete emotions and consequently understanding of the ways in which negative discrete emotions affect perceptions of online review helpfulness is limited (Li & Zhan, 2011).

Regret and frustration are among common negative emotions expressed by authors of eWOM (De Matos et al., 2008) but the effect of these discrete emotions on perceived helpfulness of online reviews has not yet been explored. Both regret and frustration are negative in valence but one emotion is associated with perceived fairness and the other with unfairness (Buchanan et al., 2016; Roseman, 1991). Analysing the effects of different emotions based on fairness will enable better understanding of the implications of discrete emotions on perceptions of helpfulness of online reviews. Drawing on previous findings and cognitive appraisal theory, this study aims to investigate how expressed emotions associated with fairness affect helpfulness of online reviews.

The application of appraisal-based approach of this study will enable enhancement of the theory of information processing, as this research aims to advance the current understanding of the role of emotions in an information-seeking situation. Also, it will improve understanding of the characteristics that review readers consider helpful during the decision-making process. Additionally, by understanding how some emotions can influence perceived helpfulness of online reviews, it will assist the development of more effective retail websites, as more helpful online reviews will be shown first, which will alleviate information overload

– a problem which can lead to less satisfaction, less confidence, and more confusion about product or service choice (Luo et al., 2013; Park et al., 2006).

The remainder of the paper is as follows. Firstly, a review of literature pertaining to helpfulness of eWOM is presented, followed by conceptual model and hypotheses development. Next is a section detailing the research methods, after which the results of two empirical studies are presented and discussed. Finally, the paper is concluded, outlining limitations and suggestions for future research.

## 2. Literature review

A comprehensive review of existing literature revealed eWOM helpfulness as a rapidly expanding area of research. Broadly, studies have determined three antecedents of eWOM helpfulness: eWOM characteristics, information source, and information receiver (Baek et al., 2012; Kim & Gupta, 2012; Park & Kim, 2008). In terms of the characteristics of eWOM, helpfulness of online reviews can be influenced by rating, content, quality, and volume (Table 1). A handful of studies (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014) have examined the impact of emotions expressed in review content on perceived helpfulness of online reviews.

Table 1. Characteristics of eWOM affecting perceived helpfulness of online reviews

<b>Factors</b>	<b>Details</b>	<b>References</b>
Rating	Overall star rating, rating inconsistency	Baek et al., 2012; Hu & Chen, 2016; Mudambi & Schuff, 2010; Robinson et al., 2012; Yan et al., 2016; Yin et al., 2016
Content	Length, proportion of negative words, images/photos, valence, objectivity/subjectivity, emotions, emotion intensity, detailed information, explained actions and reactions, review format, review type (attributed value and simple recommendation), review	Ahmad & Laroche, 2015; Baek et al., 2012; Cheng & Ho, 2015; Felbermayr & Nanopoulos, 2016; Folse et al., 2016; Hussain, et al. 2017; Jeong & Koo, 2015; Karimi & Wang, 2017; Kaushik et al., 2018; Kim & Gupta, 2012; Li & Zhan, 2011; Lockie et al., 2015; Moore, 2015; Mudambi & Schuff, 2010; Ngo-Ye &

	diagnosticity, technical information, argument diversity, expertise claim, persuasive words, presentation mode	Sinha, 2014; Park & Lee, 2008; Peng et al., 2014; Purnawirawan et al., 2015; Quaschnig et al., 2015; Robinson et al., 2012; Teng et al., 2014; Weathers et al., 2015; Willemsen et al., 2011; Wu, 2013; Xu et al., 2015; Yin et al., 2014
Quality	Relevance, timeliness, accuracy, comprehensiveness	Cheung, 2014; Park & Kim, 2008; Robinson et al., 2012; Teng et al., 2014; Zhu & Zhang, 2010
Volume	Total number of posted online reviews	Park & Lee, 2008; Singh et al., 2017; Yan et al., 2016

Emotions are defined as an internal mental state, which represents evaluative reactions to different events, agents or objects (Dillard & Pfau, 2002). The expression of emotions is one of the major motivations for individuals to write online reviews (Berger, 2011; Peng et al., 2014). Emotions embedded in the content of online reviews express how individuals experience the whole situation. Previous studies suggest that each discrete emotion has its own exclusive character that can have various impacts on outcome variables rather than only valence (Nabi, 2003). Individuals use emotional expression as a source of social information (van Kleef, 2010). According to research, emotional words are processed faster and more efficiently than non-emotional words (Kanske & Kotz, 2007). Therefore, readers of online reviews recognise discrete embedded emotions even if they are presented at a relatively superficial level (Yin et al., 2014).

Kim and Gupta's (2012) study examined the effect of positive and negative emotions on helpfulness of online reviews. The study found that convergent negative emotions in multiple reviews increase perceived informative value; similar results were observed for positive emotions. Departing from the valence-based approach, some studies used cognitive appraisal theory of emotions. The cognitive appraisal theory is a theory of emotion which states that emotions are not determined by events, but by the way an individual interprets and evaluates events (Ellsworth & Smith, 1988; Roseman, 1991; Scherer et al., 2001; Smith & Ellsworth,

1985). According to this theory, the experience of an emotion depends on the way an individual evaluates the environment along a number of cognitive dimensions. According to previous studies, it is possible to understand the distinct nature of an individual's emotional state by studying these dimensions (Ahmad & Laroche, 2015; Roseman, 1991; Smith & Ellsworth, 1985). Researchers have proposed the following dimensions of cognitive appraisal (Ahmad & Laroshe, 2015; Ellsworth & Smith, 1988; Roseman, 1991; Smith & Ellsworth, 1985):

- 1) pleasantness (valence): positive or negative outcome of the situation on the evaluator;
- 2) attention: the need to allocate attention to the situation;
- 3) control: whether the situation is controlled by the person, another person or impersonal circumstances;
- 4) certainty: whether the outcome of the event is certain or not;
- 5) perceived obstacle: presence of a goal or obstacle to the goal;
- 6) fairness (legitimacy): whether the outcome of the situation is fair or not;
- 7) agency-responsibility: responsibility for the situation (other-agency, self-agency);
- 8) anticipated effort: whether the situation needs a high or low level of effort.

Discrete emotions (e.g. hope, relief, joy, liking, pride, fear, sorrow, distress, frustration, dislike, anger, guilt and regret) (Roseman, 1991) can be classified along these appraisal dimensions. Emotions are usually associated with two or more main appraisal dimensions, which normally include valence and any other appraisal. Studies have found a relationship between the appraisal patterns and consumption/post-consumption emotions (Nyer, 1997; Roseman et al., 1990).

Ahmad and Laroche (2015) used cognitive appraisal theory of emotions to investigate how discrete emotions of hope, happiness, anxiety, and disgust expressed in online reviews affect

helpfulness votes. Using experimental surveys and field studies of product reviews, the results showed that different discrete emotions affect perceived helpfulness of reviews in different ways. For instance, happiness in the review positively influenced perceptions of helpfulness of the review and had a greater influence than hope. On the other hand, anxiety had a negative effect on perceived helpfulness of the review, whereas disgust expressed in the review had a positive effect. Similarly, Yin et al. (2014) employed appraisal theory of emotions (certainty appraisal) and also found that anxiety and disgust have different effects on perceived review helpfulness but in contrast found that anxiety had a positive effect whereas disgust had a negative effect. The disparity between the studies' findings may be explained by the focus on product reviews in one study and seller reviews in the other.

Another group of studies investigated how characteristics of source of eWOM influence helpfulness of online reviews. The studies found that perceived reviewer expertise, trustworthiness, and type of platform will have an impact on perceived helpfulness of online reviews. For example, Kim and Gupta (2012) found that perceived reviewer's rationality has a positive effect on perceived helpfulness of online reviews by using attribution theory. Attribution theory studies how individuals interpret events and how it affects their thinking and behaviour (Kelley & Michela, 1980; Snead Jr et al., 2015; Swanson & Kelley, 2001). The purpose of the attribution process is to comprehend and form meaningful perspectives about outcomes as well as to forecast and regulate them. Attribution theory states that certain factors will have an impact on an individual to infer the cause of an outcome in a certain way (Snead Jr et al., 2015). In the context of eWOM communications, attribution theory suggests that the recipients' interpretation of why someone is sharing information can influence how the information is received (Lin & Foster, 2013; Willemsen et al., 2011). Attribution theory predicts that if the individual attributes the online review about a product to that product's actual performance, then the consumer will consider this review as credible and accurate, and



be persuaded by the review. If the consumer thinks that the review is caused by incentive from the company, they will perceive it as biased and not be persuaded by the review (Jeong & Koo, 2015).

Other studies also applied attribution theory in investigating factors affecting helpfulness of online reviews (Jeong & Koo, 2015; Quaschnig et al. 2015; Sen & Lerman, 2007; Willemsen et al., 2011). For example, Jeong and Koo (2015) propose that the type and valence of online reviews affects perceived helpfulness. Applying attribution theory, they find that objective negative reviews and subjective negative reviews posted on a consumer-generated website will be more helpful than the same reviews posted on a marketer-generated website in terms of message helpfulness, whereas objective positive reviews and subjective positive reviews posted on a consumer-generated website will be rated lower than the same reviews posted on a marketer-generated website. Another study conducted by Willemsen et al. (2011) found that valence, argument density, argument diversity, and expertise claims have an impact on perceived helpfulness of a review. These variables explain 33 per cent of variance in perceived review helpfulness. Sen and Lerman (2007) also studying USA consumers found that attributions about the reviewer made by the reader mediate the impact of valence of the review on perceived helpfulness of eWOM message.

Using appraisal theory of emotions, studies have found that appraisal can influence perceived helpfulness of online reviews. For example, Ahmad and Laroche (2015) found that certainty appraisal of emotions positively and significantly affect online product reviews. The research conducted by Yin et al. (2014) found similar results regarding certainty appraisal in the context of electronics products.

Scholars call for further research on the effect of emotions on perceived helpfulness of online reviews (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014). While most existing studies considered only certainty appraisal of emotions or valence-based approach, Ahmad and Laroche (2015) recommend that other appraisal of emotions and effects on helpfulness of reviews should be studied. Thus, this research adopts fairness appraisal of emotions to investigate the effect of emotions embedded in online reviews on perceptions of helpfulness, which has not been studied before, to enhance theory of information processing.

### **3. Conceptual model and hypotheses development**

This section discusses each of the constructs of the proposed research model and presents the hypotheses. The research model (see Figure 1) is based on the appraisal theory of emotions and attribution theory. By using cognitive appraisal it is possible to study how fairness expressed through emotions in online reviews will affect review helpfulness. Applying attribution theory will help to investigate how an information source is perceived by consumers and how it will affect helpfulness of the message. Using this theory, the study will be able to investigate how perceived rationality of the reviewer will have an impact on perceived helpfulness of the review and how it will mediate the relationships between emotions embedded in the message and helpfulness of eWOM communications.

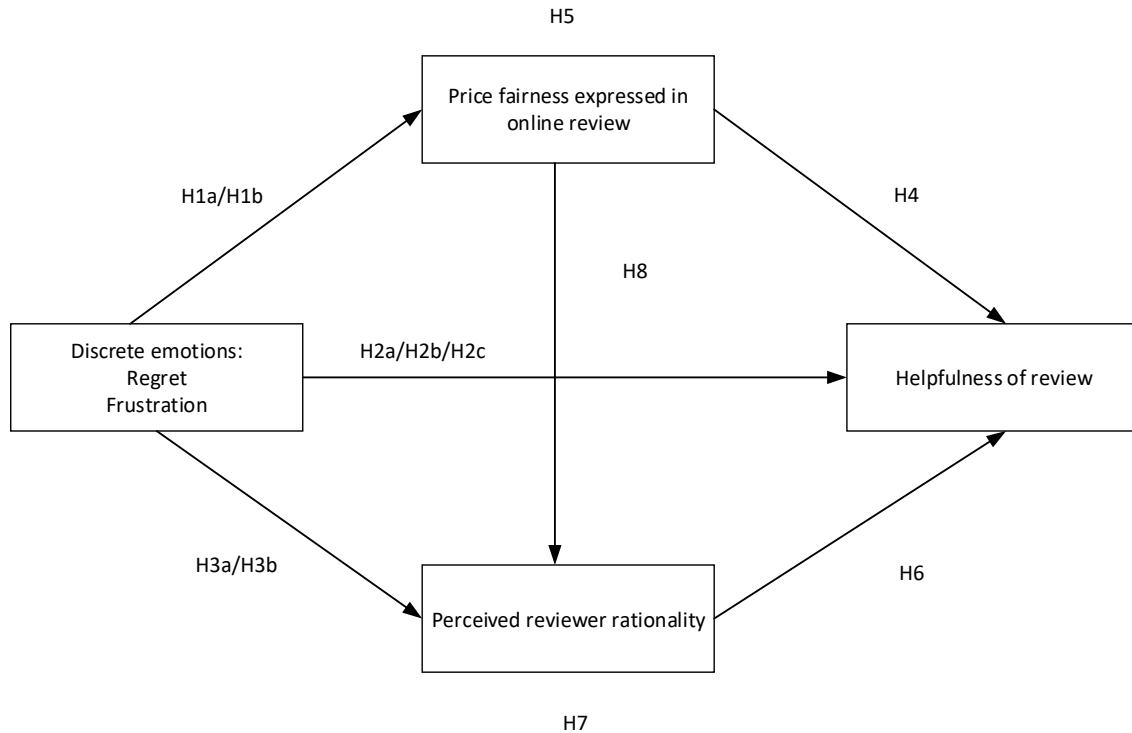


Figure 1. Conceptual model (*Source:* adapted from Ahmad & Laroche, 2015; Yin et al., 2014)

### 3.1 Emotions embedded in online reviews

Individuals use emotional expression as a source of social information (van Kleef, 2010). eWOM is likely to contain different emotional content felt in the real purchasing experience by consumers (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014). Emotions expressed in the content of online reviews show the way individuals experience the whole situation. Evidence suggests that each discrete emotion has its own exclusive character that can have various impacts on outcome variables rather than only valence (Nabi, 2003).

According to cognitive appraisal theory, emotions are induced because of a person's evaluation (appraisal) of a situation along several cognitive dimensions. Through the emotions expressed in an online review the reader can understand the expressed appraisal of emotions (Ahmad & Laroche, 2015; Yin et al., 2014), which may have an impact on those of

the reader (Ahmad & Laroche, 2015). Researchers have proposed the following dimensions of cognitive appraisal: pleasantness, attention, control, certainty, perceived obstacle, fairness (legitimacy), agency-responsibility, and anticipated effort (Roseman, 1991; Smith & Ellsworth, 1985).

Fairness refers to whether a person believes a negative outcome or a positive outcome is deserved in the situation; if the situation is perceived as not fair then an individual can feel frustrated, whereas when the outcome of the situation is perceived as fair then a person can feel regret (Buchanan et al., 2016; Roseman, 1991). Fairness is considered as a four-dimensional construct comprised of distributive fairness, procedural fairness, interactional fairness, and price fairness (Alexander & Ruderman, 1987; Bies & Sharpo, 1987; Namkung & Jang, 2010; Nikbin et al., 2016).

Price fairness refers to “a consumer’s overall judgment of price based on a comparison of the actual price to acceptable prices determined by both social standards (reference price) and self-interest (adaptation level)” (Namkung & Jang, 2010, p.1237). This research focuses on price fairness as previous studies have found that consumers perceive price as an important factor influencing their evaluation of products or services, purchase decisions, and satisfaction (Herrmann et al., 2007; Kim et al., 2015; Nakayama & Wan, 2018; Namkung & Jang, 2010), and because price cues exist in all purchase situations (Namkung & Jang, 2010).

Based on the above discussions, it is proposed that a reader of an online review expressing regret will perceive that the reviewer felt that the received outcome was negative but price was fair. However, a reader of an online review expressing frustration will perceive that the reviewer felt the received outcome was negative and price was not fair.

*H1a: Frustration expressed in an online review negatively influences perception of expressed price fairness.*

*H1b: Regret expressed in an online review positively influences perception of expressed price fairness.*

It has been found that emotions can affect assessment of a product or service and that consumers who felt regret more thoroughly evaluated their experience (Buchanan et al. 2016; Inman et al., 1997). By the same token, emotions embedded in eWOM communications can affect perceptions of helpfulness (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Ren & Hong, 2018; Yin et al., 2014; Yin et al., 2017). When consumers perceive that a reviewer used minimal cognitive effort to evaluate a product or service, they are likely to consider the information less useful (Yin et al., 2014). Therefore, it is proposed that a reader would find an online review to be more helpful if fairness emotions are expressed, expecting that the reviewer evaluated their experience more thoroughly. On the other hand, reviews in which unfairness emotions are expressed will be less helpful. Hence, if a consumer was frustrated with a product's performance and expressed it in a review, it is hypothesized that the review would be perceived as less helpful than if the reviewer felt regretful about purchasing the product. Additionally, evidence from previous studies suggests that emotions can perform as a frame and have an impact on perceived helpfulness, i.e. the way the text is written will have an impact on the reader despite the same message content (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014). Therefore, the following hypotheses are proposed:

*H2a: Frustration in an online review has a negative effect on perceived helpfulness of the review.*

*H2b: Regret in an online review has a positive effect on perceived helpfulness of the review.*

*H2c: Regret in an online review will be more helpful than frustration.*

Studies have investigated the relationship between emotions and rationality (Fineman, 2000; Kim & Gupta, 2012; Lindh & Lisichkova, 2017; Pham, 2007). It has been found that emotional states influence people's reasoning processes and their logical rationality (Pham, 2007). When consumers use emotions in online reviews, eWOM receivers can interpret them as an indicator of rationality. For example, using attribution theory, Kim and Gupta (2012) investigated the impact of negative emotions on perceived reviewer rationality by using online reviews of laptops in the context of USA consumers. It was found that when a reviewer expresses negative emotions they are perceived irrational but when positive emotions are expressed the reviewer is perceived as rational. Another study conducted by Folse et al. (2016) received similar results with negative emotions.

Some studies consider the different effects of different negative emotions on post-purchase product evaluation. For example, in the case of regret the consumer evaluates the product more rationally and logically, while experiencing emotions such as frustration can lead to impulsive judgments (Inman et al., 1997; Zeelenberg & Pieters, 2007). Thus, it can be proposed that these emotions will provide cues about reviewer rationality. As a result, when the reader reads a review expressing regret, they will attribute it to reviewer rationality, while if the review expresses frustration then they will attribute it to irrationality. Based on the previous studies on negative emotions and their relationships with perceived reviewer rationality, the following hypotheses are proposed:

*H3a: Frustration expressed in an online review negatively affects perceived reviewer rationality.*

*H3b: Regret expressed in an online review positively affects perceived reviewer rationality.*

### 3.2 Expressed price fairness

Previous studies have found that price fairness influences a consumer's motivation to engage in eWOM communications (Namkung & Jang, 2010). When a consumer perceives an outcome as fair they will engage in eWOM communications in order to advise others on the product/service; however, when they feel that the outcome is unfair they will engage in eWOM communications to vent their negative feelings and punish the company (Wetzer et al., 2007). Based on attribution theory (Folkes, 1988), the reader of the online review establishes the author's intention to write the review which in turn affects perceived helpfulness of the review (Kim & Gupta, 2012). Previous experimental studies have found that cognitive appraisals of emotions expressed in online reviews influence perceptions of helpfulness (Ahmad & Laroche, 2015; Yin et al., 2014). As fairness is one of the cognitive appraisals of emotions, it can be proposed that expressed price fairness will influence helpfulness of online reviews. Additionally, Ahmad and Laroche (2015) argued that it is intuitive that fairness expressed in the online review should have a positive impact on the perceived helpfulness of online reviews. Thus, this leads to the following research hypothesis:

*H4: Expressed price fairness positively influences perceived helpfulness of an online review.*

The preceding discussion indicates that emotions in online reviews will not only have a direct effect on perceptions of helpfulness but also an indirect effect through expressed emotion appraisal because of the nature underlying the emotions concept (Roseman, 1991). Based on the previous studies (Ahmad & Laroche, 2015; Namkung & Jang, 2010; Roseman, 1991; Yin et al. 2014) and from the developed hypotheses, it is proposed that emotions will influence price fairness, which will positively affect perceived helpfulness of the online reviews, so determining the following hypothesis:

*H5: Expressed price fairness will mediate the relationships between emotions and review helpfulness.*

### **3.3 Perceived rationality of the reviewer**

Previous studies have investigated how the reader's perception of the informational source will affect message helpfulness (Cheung, 2014; Kim & Gupta, 2012; Peng et al., 2014; Yin et al., 2017). Reviewer rationality refers to the perception that the message source has the ability to reason (Shugan, 2006). It is a source attribution. It has been found that when the information source is perceived as irrational it is seen as less informative (Folse et al., 2016; Kim & Gupta, 2012) and, as a result, less helpful for decision-making. However, if the reader perceives the information source as rational, they will consider the online review helpful. Based on the previous literature and findings, the following hypothesis is proposed:

*H6: Perceived reviewer rationality has a positive effect on the perceived helpfulness of an online review.*

Based on the previous discussion and results of the previous studies, only investigating the direct effect of emotions on helpfulness of online reviews will provide limited results. Emotions expressed will have an effect on helpfulness of online reviews but also an indirect effect through perceived reviewer rationality (Ahmad & Laroche, 2015; Folse et al. 2016; Kim & Gupta 2012; Yin et al. 2014; Yin et al., 2017). Previous studies (Folse et al., 2016; Kim & Gupta, 2012) proposed that emotions do not only have a direct effect on perceived helpfulness of online reviews but also an indirect effect through attribution about the writer. For example, Kim and Gupta (2012) found that negative emotions have an indirect effect on perceived helpfulness of online reviews through reviewer rationality for online reviews about laptops.



Based on the previous studies and from the developed hypotheses, it is proposed that emotions will influence perceived reviewer rationality, which will positively affect perceived helpfulness of online product and service reviews. Therefore, the following hypothesis is proposed:

*H7: Perceived reviewer rationality mediates the relationship between expressed emotions and perceived helpfulness of an online review.*

Previous research found that perception of fairness has an impact on individual behaviour (Smith, 1991; Urbany et al., 1989). Also, studies find that perceived fairness influences rational behaviour (Srivastava et al., 2008; Urbany et al., 1989; Welsh, 2003). Most of the studies investigating the relationship between perceived fairness and rational behaviour are from Behaviour Economics literature. For example, Welsh (2003) studied perception of fairness in negotiation and its effects on rational behaviour of individuals. Srivastava et al. (2008) studied the impact of perceived fairness and rational behaviour in bargaining situations. The results showed that when an individual perceives that the offer is unfair they reject it, even though they get nothing. As a result, their behaviour is irrational.

Based on the previous discussion, developed hypotheses and previous studies (Folse et al., 2016; Kim & Gupta, 2012; Srivastava et al., 2008; Welsh 2003), it is suggested that emotions influence review helpfulness through price fairness first and then reviewer rationality. As a result, the following hypothesis is proposed:

*H8: The relationship between emotions and helpfulness is sequentially mediated by price fairness and reviewer rationality.*

## **4. Methodology**

During the literature review, it became apparent that differences in results between studies might be caused by variation in review focus, e.g. product reviews (Ahmad & Laroche, 2015; Kim & Gupta, 2012) or seller reviews (Yin et al., 2014). Furthermore, none of these studies had considered service reviews. Therefore, to examine how discrete emotions expressed in online reviews influence perceived review helpfulness, this research conducted two studies using experimental surveys. Study 1 examines perceived helpfulness of product online reviews whereas study 2 investigates perceived helpfulness of service online reviews.

### **4.1 Stimulus Materials**

The first step in preparation of stimuli required selection of a product and service for the reviews. Digital cameras were chosen for the product-focussed reviews as they are a high involvement product, thus consumers pay greater attention to the content of online reviews (Paramaswaran, 2003). Additionally, digital camera buyers are more likely in comparison with other buyers to provide online reviews post-purchase (Lu et al., 2014). The context of a restaurant was chosen for service-focussed reviews because it is common to write reviews in the field of gastronomy and studies consider restaurants as a high involvement service (Haywood, 1989; Reimer & Benkenstein, 2016), so again consumers will pay greater attention to the content of online reviews.

Next, it was necessary to identify text reviews that were negative in valence but relatively non-emotional. In this step, product reviews from different websites such as amazon.com, ebay.com, and epinions.com were analysed. After analysing reviews connected to digital cameras, one review, which reflected equivalent levels of frustration and regret, was selected for use for the control condition. The same procedure was performed for restaurants reviews, using websites tripadvisor.com and yelp.com (Appendix).

The final step was the manipulation of the selected product and service reviews with the discrete emotions of frustration and regret. The information content of the messages was kept the same for all conditions and the emotions expressed were tied to the product or service. Consistent with other emotional framing research, the context was created according to the emotion (Ahmad & Laroche, 2015; Yin et al., 2014). In the frustration condition, the consumer received a negative outcome and perceived that the price was unfair; in the regret situation, the consumer had the same experience but perceived the price was fair.

A pattern of expressing different emotions through different text endings associated with cognitive appraisal was observed from previous research (e.g. Ahmad & Laroche, 2015; Yin et al 2014). As a result, emotional expression was manipulated directly by varying the sentence appearing at the end of the review. In the frustration condition, the review ended with “Even though the price is low, the quality is poor. I am really frustrated with this camera” for product and “Even though the price is low, the quality of food and service is very poor. I left feeling frustrated” for service. In the regret condition, the product review ended with “Quality is poor, but you get what you paid for, the price was low. I regret that I bought it” and the service review ended with “The quality of food and service was poor, but you get what you paid for, the price was low. I regret that I chose this restaurant.” Applying this process to each of the two selected contexts yielded a final set of six reviews (Appendix).

To assess the effectiveness of emotion manipulation in the reviews, a pilot test was performed. 84 participants were asked to indicate the extent to which they felt that the reviewer expressed frustration/regret. Response options included frustrated and regretful measured on a seven-point Likert scale anchored from not at all (1) to very much (7). The results showed that product reviews in the frustration condition were more related to frustration than to regret ( $M=5.93$  versus  $4.03$ ,  $p<0.001$ ), and product reviews in the regret condition were more related to regret than to frustration ( $M=6.44$  versus  $3.96$ ,  $p<0.001$ ).

Similar results were found for service reviews: in the frustration condition reviews were more related to frustration than to regret ( $M=5.76$  versus  $4.38$ ,  $p=0.004$ ), and in the regret condition they were more related to regret than to frustration ( $M=5.96$  versus  $4.74$ ,  $p=0.006$ ). In the control condition neither the product review ( $M=5.25$  versus  $4.96$ ,  $p=0.362$ ) nor the service review ( $M=5.57$  versus  $5.36$ ,  $p=0.110$ ) were significantly different for perceptions of frustration or regret. Thus, the manipulation checks for the frustration and regret conditions were successful for both product and service reviews.

## **4.2 Instrument development**

Participants were asked to read the product/service review and indicate perceived review helpfulness. The following questions were used to measure review helpfulness via a seven-point Likert scale (1 - not at all, 7 - very much): Was the above review helpful for you? Was the above review useful for you? Was the above review informative for you? Assuming that you were thinking of buying this camera/going to this restaurant in real life, how likely would you be to use this review in your decision-making? Indicate the degree to which this review helps you decide about the camera/restaurant (adapted from Ahmad & Laroche, 2015; Sen & Lerman, 2007; Yin et al., 2014).

To measure price fairness, respondents were required to state how much they agreed/disagreed (1 - strongly disagree, 7 - strongly agree) with the following statements: The writer of the review felt that the product/service s/he got was reasonably priced; The writer of the review felt that the price was appropriate for what s/he got; The writer of the review felt that the price was fair; The writer of the review felt that the price charged for the product/service was proper (adapted from Kim et al., 2015; Namkung & Jang, 2010).

To measure reviewer rationality, respondents were asked to indicate the extent to which they felt the writer of the review was: 1-irrational, 7 rational; 1-unreasonable, 7-reasonable; 1-unreliable, 7 reliable (adapted from Folse et al., 2016; Kim & Gupta, 2012).

#### **4.3 Data collection and analysis**

Data was collected using a convenience sample of UK consumers aged 18+ via an online survey platform as well as paper-based distribution of the survey. To minimize effects of practice and boredom (Charness et al., 2012), and in accordance with similar studies (e.g. Ahmad & Laroche, 2015; Jeong & Koo, 2015; Kim & Gupta, 2012; Park & Kim, 2008; Yin et al., 2014), a between-subject design was selected in order to hold constant the substantive content of the review, strengthening the manipulation of emotions. Therefore, respondents were randomly assigned to read either a regret, frustration or control version of both the camera and restaurant review (Appendix).

It was determined that OLS regression was an appropriate technique to test the proposed hypotheses by using PROCESS macro (Hayes, 2013) together with one-way ANOVA. PROCESS is a computational tool for SPSS software which can be used to test mediation, moderation, and conditional process analysis. It uses an ordinary least squares or logistic regression path analysis framework in order to calculate the indirect and direct effect in mediator models. Also, PROCESS macro uses the bootstrap method for inference about indirect effects in mediation models. Bootstrapping involves repeatedly randomly sampling observations (hundreds or thousands of times) with replacement from the data set to compute the desired statistic in each resample (Hayes, 2013). As the macro provides a formal test of the direct and indirect effect, it is particularly suited for the serial multiple mediation model in this study.

Considering the selected analysis methods, statistical power analyses, and sample size of similar studies (e.g. Ahmad & Laroche, 2015), it was determined that a sample size of at least 450 eligible responses was required for both studies.

## **5. Results**

### **5.1 Study 1: Negative emotions in the context of product reviews**

A total of 680 responses were received. After deletion of unusable responses - based on eligibility criteria, attention check questions, and engagement - a final test sample of 519 remained. As is commonly found for this type of research, just over a third of respondents were aged 18 to 24; distribution across all other age groups was more even, although the age group 55+ had the least respondents (11.6%). The sample contained slightly more males (52.8%) than females (47.2%). More than 40% of respondents were employed either full- or part-time, 5.8% had retired, and 32.4% of respondents were either students or students with a part-time job.

Reliability and validity of constructs were examined. Cronbach's alpha values for product review helpfulness were between .91 and .95 across the three manipulations, for price fairness were between .85 and .91, and for reviewer rationality were between .85 and .88, demonstrating adequate internal reliability for all constructs (Nunnally, 1978). Exploratory factor analysis (EFA) was conducted in order to assess convergent validity of the constructs, applying the principle components method with Varimax rotation. For each condition, EFA provided two factors and loading of items on their corresponding factors were higher than 0.7 with no cross-loading. Additionally, average variance extracted for two constructs was above 0.5, proposing convergent validity (Fornell & Larcker, 1981; Straub, 1989).

To investigate whether perceptions of helpfulness of the product online review were different for different types of emotions one-way ANOVA was performed. The results indicate that the difference in means between control ( $M=5.19$ ,  $SD=1.20$ ), regret ( $M=5.60$ ,  $SD=1.20$ ), and frustration ( $M=4.46$ ,  $SD=1.20$ ), are statistically significant ( $F(2, 516)=40.342$ ,  $p=.000$ ) (Figure 2).

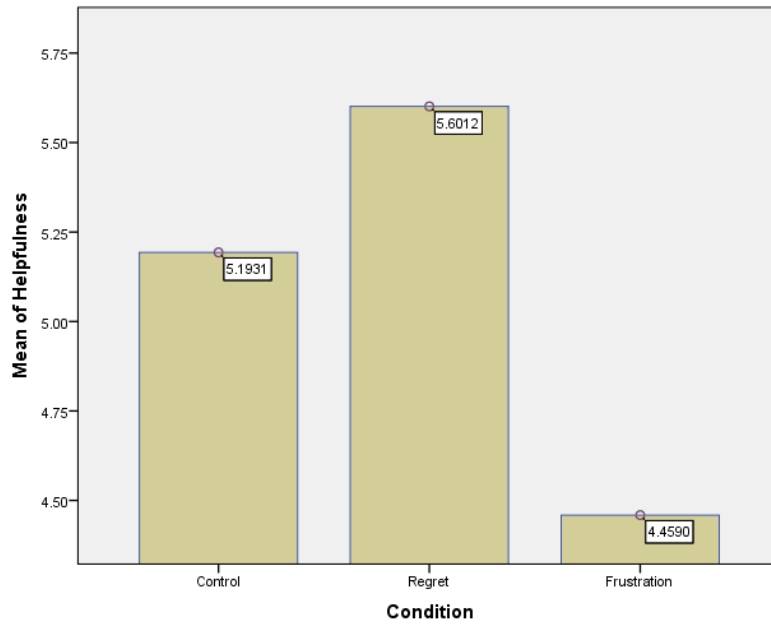


Figure 2. Perceived helpfulness of product online review among three conditions

Regression analysis was used to investigate the hypotheses that expressed price fairness and reviewer rationality mediate the effect of emotions on perceived helpfulness. The total effect of regret on helpfulness is  $c1=.41$ ,  $t(516)=3.15$ ,  $p=.002$  (Figure 3). Results indicate that regret influences price fairness  $a1=.92$ ,  $t(516)=6.41$ ,  $p<.001$ , and that expressed price fairness positively influences helpfulness,  $b1=.12$ ,  $t(514)=3.01$ ,  $p=.003$ . The indirect effect was tested using a bootstrap estimation approach with 5000 samples. These results indicated that the indirect effect was significant,  $Ind1r=0.1087$ ,  $SE=.041$ , 95%  $CI=.0386$ ,  $.1993$ . After including fairness in the model, regret was no longer a significant predictor of helpfulness,  $c'1=.14$ ,

$t(514)=1.16, p=.231$ . As a result, it can be concluded that price fairness is a full mediator between regret and perceived helpfulness.

The results of the regression analysis indicate that regret does not influence reviewer rationality  $a_2=.21, t(515)=1.54, p=.124$ . These results of bootstrap analysis indicated that the indirect effect was insignificant,  $Ind3r=.087, SE=.058, 95\%CI=-.0171, .2062$ . As a result, it can be concluded that reviewer rationality is not a mediator between regret and perceived helpfulness.

The total direct effect of frustration on helpfulness is  $c_2= -.73, t(516)= -5.70, p<.001$  (Figure 3). Results show that frustration influences price fairness  $a_3=-.60, t(516)=-4.33, p<.001$  and that expressed price fairness has a positive impact on helpfulness,  $b_1=.12, t(514)=3.01, p=.003$ . The results of the bootstrap analysis proposed that the indirect effect was significant,  $Ind1f=-.0707, SE=.030, 95\%CI=-.1414, -.0221$ . After including fairness in the model, frustration was still a significant predictor of helpfulness but the coefficient decreased,  $c'_2=-.51, t(514)=-4.44$ . Thus, it can be concluded that price fairness is a partial mediator between frustration and perceived helpfulness.

Based on the results of the analysis, it can be concluded that frustration does not influence perceived rationality of the reviewer,  $a_4=-.26, t(515)=-1.84, p=.067$ . Also, the indirect effect was non-significant,  $Ind3f=-.1064, SE=.059; 95\%CI=-.2331, .0036$ . As a result, it can be concluded that reviewer rationality is not a mediator between frustration and perceived helpfulness.

The effect of price fairness on perceived reviewer rationality is significant  $d_{21}=.20, t(515)=3.88, p<.001$ . Also, the effect of reviewer rationality on perceived helpfulness is also significant  $b_2=.41, t(514)=8.88, p<.001$  (Figure 4). Additionally, the indirect effect of emotions on helpfulness through price fairness and rationality is statistically significant,



Ind2r=.07, SE=.025, 95% CI=.0337, .1377, Ind2f=-.05, SE=.018, 95% CI= -.0948, -.0216. So, it can be concluded that price fairness and reviewer rationality sequentially mediate the relationship between emotions and review helpfulness.

Approximately 33 per cent of the variance in helpfulness was accounted for by the predictors (frustration, regret, price fairness, and rationality) ( $R^2=.3317$ ). When just regret and frustration were included in the model, only 13.5 per cent of the variance in helpfulness was accounted for by the predictors ( $R^2=.1352$ ).

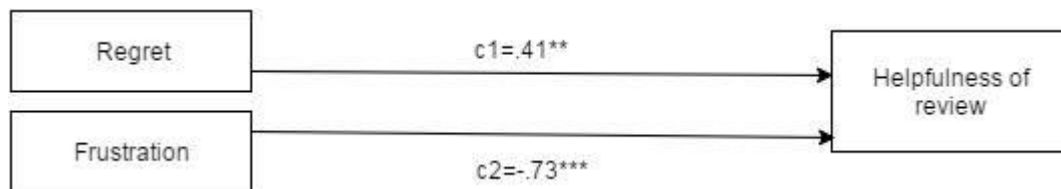


Figure 3. Total effect model

Note:  $N=519$ , \*\* $p < .01$ ., \*\*\* $p < .001$ .

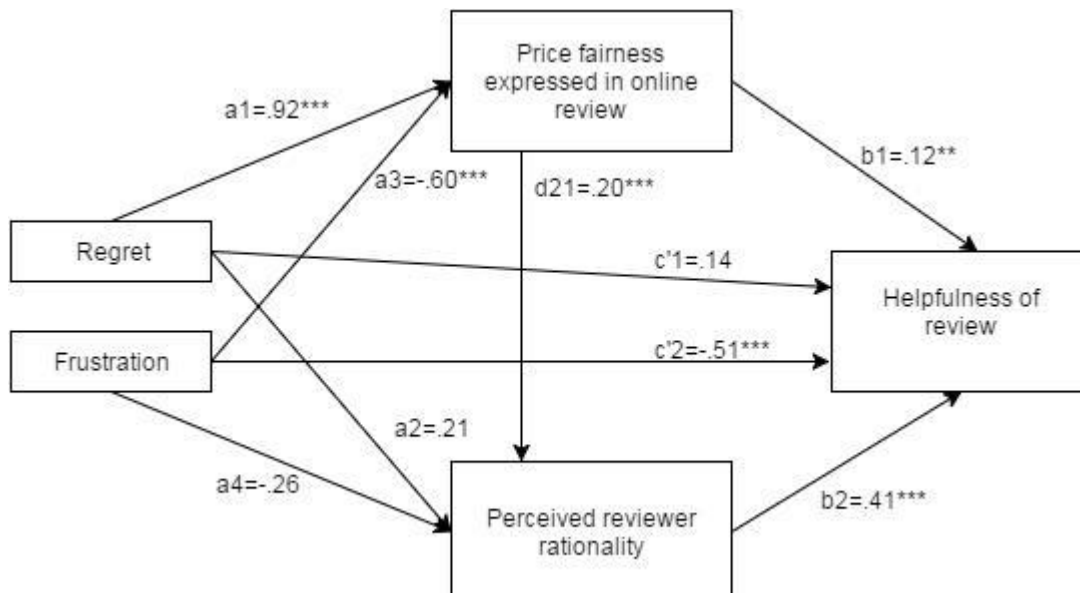


Figure 4. Estimates of emotions on perceived helpfulness through expressed price fairness and reviewer rationality

Note:  $N=519$ , \*\* $p < .01$ ., \*\*\* $p < .001$ .

## 5.2 Study 2: Negative emotions in the context of service reviews

Following deletion of unusable responses using the same criteria as for product reviews, the total of 680 responses received was reduced to a final usable sample of 459. Again, more than a third of respondents were aged 18 to 24 but distribution across all other age groups was more even. There was a slightly greater representation of male (54.3) than female (45.7) respondents for study 2 than study 1. Almost half of respondents were employed either full- or part-time, and 30% of respondents were either students or students with a part-time job.

Reliability and validity of constructs were examined. Cronbach's alpha values for review helpfulness were between .86 and .93 across the three manipulations, for price fairness were between .90 and .94, and for reviewer rationality were between .87 and .90, demonstrating adequate internal reliability for all constructs (Nunnally, 1978). EFA was conducted in order to assess convergent validity of the constructs, applying the principle components method with Varimax rotation. For each condition, EFA provided two factors and loading of items on their corresponding factors were higher than 0.7 with no cross-loading. Additionally, average variance extracted for two constructs was above 0.5, proposing convergent validity (Fornell & Larcker, 1981; Straub, 1989).

One-way ANOVA was performed to test whether perceived helpfulness of the service online review was different for different types of emotions. The results indicate that the difference in means between control ( $M=5.17$ ,  $SD=1.18$ ), regret ( $M=5.57$ ,  $SD=1.15$ ), and frustration ( $M=4.74$ ,  $SD=1.07$ ), are statistically significant ( $F(2, 450)=20.192$ ,  $p=.000$ ) (Figure 5).

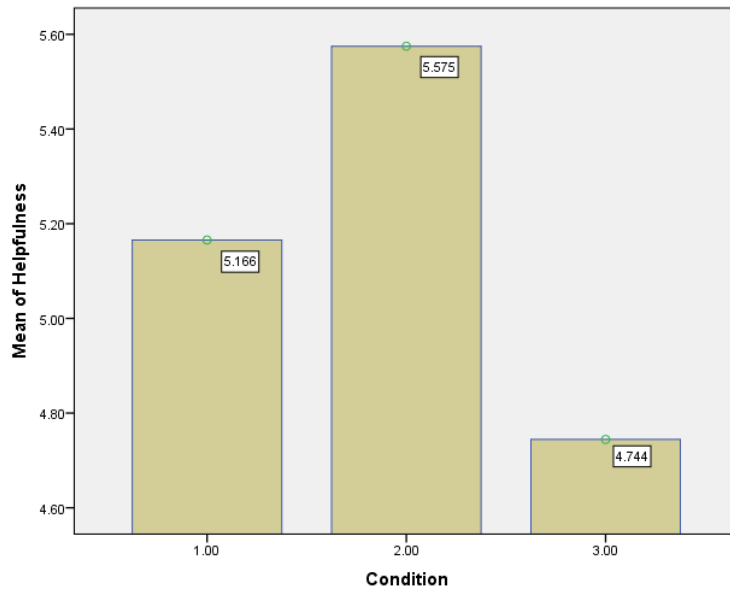


Figure 5. Perceived helpfulness of service online review among three conditions

Regression analysis was used to investigate the hypothesis that expressed price fairness and reviewer rationality mediate the effect of emotions on perceived helpfulness. The total effect of regret on helpfulness is  $c1=.40$ ,  $t(452)=2.95$ ,  $p=.003$  (Figure 6). Results indicate that regret influences price fairness  $a1=.90$ ,  $t(452)=5.19$ ,  $p<.001$ , and that expressed price fairness positively influences helpfulness,  $b1=.09$ ,  $t(450)=2.49$ ,  $p=.013$ . The indirect effect was tested using a bootstrap estimation approach with 5000 samples. These results indicated that the indirect effect was significant,  $Ind1r=0.0807$ ,  $SE=.037$ ,  $95\%CI=.0212, .1703$ . After including fairness in the model, regret was no longer a significant predictor of helpfulness,  $c'1=.16$ ,  $t(450)=1.33$ ,  $p=.183$ . As a result, it can be concluded that price fairness is a full mediator between regret and perceived helpfulness.

Based on the results of the regression analysis, it can be concluded that regret influences perceived rationality  $a2=.30$ ,  $t(451)=2.01$ ,  $p=.045$ , and that rationality positively influences helpfulness  $b2=.43$ ,  $t(450)=8.66$ ,  $p<.001$ . The results of bootstrap analysis indicated that the indirect effect was significant.  $Ind3r=.13$ ,  $SE=.0655$ ,  $95\%CI=.0028, .2655$ . As a result, it can be concluded that reviewer rationality is a mediator between regret and helpfulness.

The total direct effect of frustration on helpfulness is  $c_2 = -.42$ ,  $t(452) = -3.20$ ,  $p = .002$ . Results show that frustration significantly influences price fairness  $a_3 = -.42$ ,  $t(452) = -2.72$ ,  $p = .007$  and that expressed price fairness has a positive impact on helpfulness  $b_1 = .09$ ,  $t(450) = 2.49$ ,  $p = .013$ . The results of the bootstrap analysis proposed that the indirect effect was significant,  $Ind1f = -.04$ ,  $SE = .0204$ ,  $95\%CI = -.0949, -.0086$ . After including price fairness in the model, frustration was still a significant predictor of helpfulness,  $c'_2 = -.34$ ,  $t(450) = -2.87$ ,  $p = .004$ , but the coefficient decreased. Thus, it can be concluded that price fairness is a partial mediator between frustration and perceived helpfulness.

Based on the results of the analysis, it can be concluded that the influence of frustration on perceived rationality of the reviewer is not significant,  $a_4 = -.07$ ,  $t(451) = -.484$ ,  $p = .628$  (Figure 7). Also, the indirect effect was not significant  $Ind3f = -.03$ ,  $SE = .0634$ ,  $95\%CI = -.1561, .0952$ . As a result, it can be concluded that reviewer rationality is not a mediator between frustration and perceived helpfulness.

The effect of price fairness on perceived reviewer rationality is not significant  $d_{21} = .074$ ,  $t(451) = 1.524$ ,  $p = .128$  (Figure 7). Also, the indirect effect of emotions on helpfulness through price fairness and rationality is not statistically significant,  $Ind2r = -.03$ ,  $SE = .0205$ ,  $95\%CI = -.0052, .0776$ ,  $Ind2f = -.013$ ,  $SE = .0116$ ,  $95\%CI = -.0463, .0015$ . So it can be concluded that price fairness and reviewer rationality does not sequentially mediate the relationship between emotions and review helpfulness.

Approximately 31 per cent of the variance in helpfulness was accounted for by the predictors (frustration, regret, price fairness, and rationality) ( $R^2 = .3068$ ). When just regret and frustration were included in the model, only 8 per cent of the variance in helpfulness was accounted for by the predictors ( $R^2 = .0789$ ).

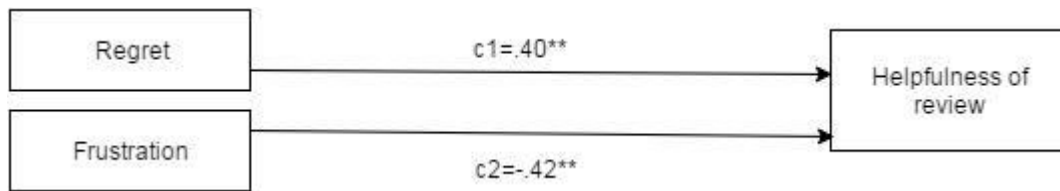


Figure 6. Total effect model

Note:  $N=519$ ,  $**p < .01$ .

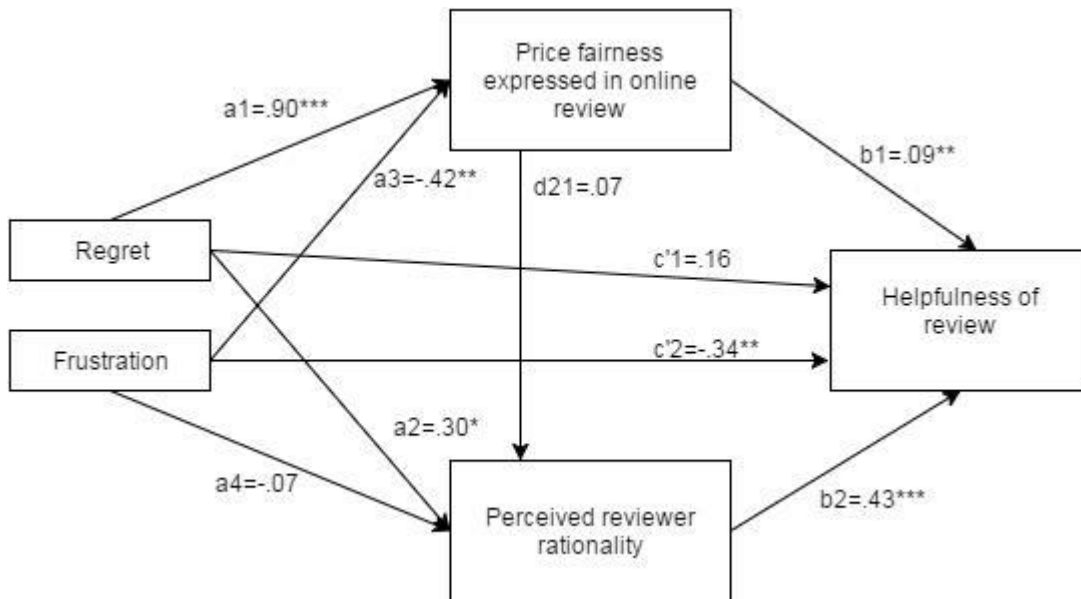


Figure 7. Estimates of emotions on perceived helpfulness through expressed price fairness and reviewer rationality

Note:  $N=519$ ,  $*p < .05$ ,  $**p < .01$ ,  $***p < .001$ .

## 6. Discussion

In contrast to previous studies, which focused on valence (Baek et al., 2012; Jeong & Koo, 2015; Willemsen et al., 2011), length (Baek et al., 2012; Cheng & Ho, 2015), and review type (Park & Lee, 2009), this study investigated the effect of discrete emotions expressed in online reviews. Negative online reviews have been studied in eWOM literature, although consideration of their impact has been based on their valence instead of paying attention to their content (Floh et al., 2013; Floyd et al., 2014). Only recently have researchers started to

examine the role of content and emotions embedded in the message on perceived helpfulness of online reviews (Ahmad & Laroche, 2015; Kim & Gupta, 2012; Yin et al., 2014). This paper extends these recent studies, demonstrating how different emotions can influence helpfulness of both product and service online reviews using fairness appraisal of emotions. A summary of the research findings is presented in Table 2.

Table 2. Results of hypotheses testing

Hypothesis	Product reviews	Service reviews
<b>H1a:</b> Frustration expressed in an online review negatively influences perception of expressed price fairness.	Supported***	Supported**
<b>H1b:</b> Regret expressed in an online review positively influences perception of expressed price fairness.	Supported***	Supported***
<b>H2a:</b> Frustration in an online review has a negative effect on helpfulness of the review.	Supported***	Supported**
<b>H2b:</b> Regret in an online review has a positive effect on helpfulness of the review.	Supported***	Supported**
<b>H2c:</b> Regret in an online review will be more helpful than frustration.	Supported*	Supported*
<b>H3a:</b> Frustration expressed in an online review negatively affects perceived reviewer rationality.	Not supported	Not supported
<b>H3b:</b> Regret expressed in an online review positively affects perceived reviewer rationality.	Not supported	Supported*
<b>H4:</b> Expressed price fairness positively influences helpfulness of an online review.	Supported**	Supported**
<b>H5:</b> Expressed price fairness will mediate the relationships between emotions and review helpfulness.	Supported*	Supported*
	Supported*	Supported*
<b>H6:</b> Perceived reviewer rationality has a positive effect on the perceived helpfulness of an online review.	Supported***	Supported***
<b>H7:</b> Perceived reviewer rationality mediates the relationship between expressed emotions and perceived helpfulness of an online review.	Not Supported	Supported*
	Not supported	Not supported
<b>H8:</b> The relationship between emotions and helpfulness is sequentially mediated by price fairness and reviewer rationality.	Supported*	Not supported
	Supported*	Not supported

Note: \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

It was found that regret and frustration influence perception of expressed price fairness for both product and service reviews (H1a, H1b). When a person reads the review, the emotional

perspective taken by the writer may have an impact on the reader (Ahmad & Laroche, 2015; Hong et al., 2017; Yin et al., 2017). Through the emotions expressed in the review, the reader can understand the expressed appraisal of emotions (Ahmad & Laroche, 2015; Yin et al., 2014). For example, if regret is expressed in the review, the reader perceives that the reviewer felt that the received outcome is negative but the price is fair. However, when reading a review expressing frustration, the reader perceives that the reviewer felt the received outcome is negative and the price is not fair. The results are in line with previous findings which stated that emotions expressed in the review will influence the perception of the emotion appraisal (Ahmad & Laroche, 2015, Yin et al, 2014).

H2a, H2b, and H2c examined the relationships between expressed emotions and perceived helpfulness. This study found that different emotions have different effects on perceived message helpfulness: reviews expressing regret positively affect helpfulness, while frustration has a negative impact on helpfulness. These findings support hypotheses H2a and H2b for both product and service reviews. Also, when different types of reviews were compared, the results indicated that reviews expressing regret were considered more helpful than reviews expressing frustration, which supports hypothesis H2c for product and service reviews. Such results can be explained by a decrease in fairness (Cropanzano et al., 2008; Namkung & Jang, 2010). Thus, it can be concluded that different emotions have different impacts on perceived review helpfulness. Other studies on emotions in eWOM messages found similar results, which highlights that helpfulness of reviews is influenced by different types of emotions (Ahmad & Laroche, 2015; Yin et al., 2014)

As one of the motivations for people to engage in eWOM communications, based on the result of this study, price fairness also has an impact on perceived helpfulness of online reviews for both products and services. Thus, H4 is supported. The findings can be explained by attribution theory so the reader ascertains the writer's intention to write the

product/service review. Attributions made by the reader can influence the perceived helpfulness of online product/service reviews (Kim & Gupta, 2012; Yin et al., 2017). It was revealed that the more a review is attributed to a factual performance or quality of product/service, the more a reader of the review will evaluate it as helpful (Quaschnig et al., 2015). However, when the reader attributes the review to some reviewer idiosyncrasy, then the review will not be perceived as helpful (Quaschnig et al., 2015; Sen & Lerman, 2007). Thus, based on the results of the current study it can be argued that when the price is perceived as unfair the reader assumes that the reviewer will write eWOM to punish the company; however, when the price is perceived as fair the reader assumes that the reviewer will write eWOM to share information about the product with other people, which is perceived as more helpful.

H3a and H3b tested relationships between expressed emotions and perceived reviewer rationality. It was found that both frustration and regret expressed in the product review do not influence perceived reviewer rationality, thus H3a and H3b are not supported. However, for service reviews, H3b is supported while H3a is not. The results contradict previous studies (Folse et al., 2016; Kim & Gupta, 2012), which found that negative emotions have an impact on perceived reviewer rationality. However, these studies did not test the relationships using particular emotions, just emotions based on their valence. The difference in the results can be explained by the fact that not all discrete emotions influence perceived reviewer rationality. Also, the intensity of emotions can influence perceived reviewer rationality (Folse et al., 2016; Kim & Gupta, 2012). However, in recent studies, both the emotions were found not to be intense. Also, it was found by Kim and Gupta (2012) that positive emotions did not influence perceived reviewer rationality. Thus, it can be argued that regret and frustration do not predict perceived reviewer rationality in the context of product reviews, as they are lower in intensity. Also, as a camera is a complicated and expensive product it is expected that



when making decisions consumers will not just take into consideration emotions to judge reviewer rationality but will also pay attention to other cues (e.g. expressed price fairness) (Hong, 2015; Lay-Yee et al., 2013). Another explanation for the results can be the way the reader of the review perceived the reviewer. The study conducted by Folse et al. (2016) found that expressed emotions do not affect perceived rationality of the reviewer if the reviewer is perceived as an expert. Thus, it may be that the writer of the camera review was considered by study participants as an expert.

For service reviews, the results showed emotions influence perceived reviewer rationality. The difference in the results can be explained by product types. Emotions would not influence reviewer rationality directly in the case of a digital camera, as it can be argued that hedonic reactions are not expected and not relevant. However, for restaurant reviews the reader will expect hedonic reactions (Hagen & O'Brien, 2015). Another explanation could be that the writer of the service review was perceived as a novice, as the review did not have any complicated or technical language. Novices are considered less rational when their negative reviews have embedded emotions, proposing that readers may attribute the use of emotions to the reviewer's characteristics to ultimately judge a service (Folse et al., 2016). However, the results showed that only regret influences perceived reviewer rationality, while frustration did not. As regret is attributed to self-agency (Ellsworth & Smith, 1988; Roseman, 1991; Smith & Ellsworth, 1985), it can be argued that regret has a positive impact on perceived reviewer rationality. So, the results of the current study showed that the influence of emotions on perceived reviewer rationality will depend on product/service type and types of discrete emotions.

H6 proposed a positive effect of perceived reviewer rationality on review helpfulness. The relationships between perceived reviewer rationality and review helpfulness were supported by data in the context of product and service reviews. The findings can be explained by

attribution which the reader makes about the reviewer (Kelley & Michela, 1980; Swanson & Kelley, 2001; Snead Jr et al., 2015). If the reviewer is perceived as irrational the reader might attribute the negative emotions to the reviewer's personal dispositions rather than the product (Kim & Gupta, 2012; Yin et al., 2017). They would consider the reviewer as impulsive and not logical (Hagen & O'Brien, 2015). As a result, the reader will discount information in the review which will make the review less helpful for decision making. Based on the result of the regression analysis it was found that price fairness partially mediated the relationships between emotions and review helpfulness for both product and service reviews (H5). That is, the previously significant relationships between emotions and helpfulness reduced when fairness was included in the model. The results found that discrete emotions are mediated by appraisals of emotions, which is in line with previous research (e.g. Ahmad & Laroche, 2015)

H7 investigated the mediating role of reviewer rationality between emotions and perceived helpfulness. The mediating role was not supported for product reviews and only partially supported for service reviews in the case of expressed regret. As a result, it was found that in terms of product reviews, the relationships between emotions and helpfulness are not influenced by perceived reviewer rationality. The results are different from previous studies (e.g. Folse et al., 2016; Kim & Gupta, 2012) on the mediating role of perceived reviewer rationality. However, for service reviews the relationships between expressed regret and helpfulness are affected by perceived reviewer rationality. It could be due to the reason that, for services, readers would attribute the emotions to the rationality rather than in terms of product reviews (Hagen & O'Brien, 2015).

H8 examined the sequential mediation of emotions and helpfulness by price fairness and reviewer rationality. The sequential mediation was supported for product reviews but not for service reviews. It can be argued that the perception of price unfairness leads to the biased evaluation of product characteristics and focusing only on negative aspects (Lee et al., 2011).

As a result, the reviewer's behavior will not be rational or logical, which will influence the product evaluation. For service reviews, it was found that expressed price fairness does not influence perceived reviewer rationality. It can be explained by the fact that service reviews about restaurants are expected to show hedonic reactions such as expressed emotions (Hagen & O'Brien, 2015), which will influence judgments about reviewer rationality. Thus, based on the results of testing H8 it can be concluded that expressed price fairness influences perceived reviewer rationality, and both fairness and rationality sequentially mediate the relationships between expressed emotions and review helpfulness in the context of product reviews, but not in the context of service reviews.

## **6.1 Theoretical contributions**

A core theoretical contribution of this study is that it went beyond a valence-based approach and used fairness appraisal theory of emotions (Ahmad & Laroshe, 2015; Ellsworth & Smith, 1988; Roseman, 1991; Smith & Ellsworth, 1985). Fairness had not been tested as a mediator in previous research. Adding fairness as a mediator enabled this study to explore how cognitive appraisal of emotions influences the way people perceive information, thus responding to calls for more detailed investigation of this issue made by previous researchers (Ahmad & Laroche, 2015; Yin et al., 2014). This application of an appraisal-based approach enabled the research to enhance the theory of information processing.

Perceived rationality of the reviewer has been added in this model as a mediator. It has been found by previous research that it can influence the way people perceive the helpfulness of information (Folse et al., 2016; Kim & Gupta, 2012). However, previous research did not consider how it could be affected by factors such as fairness expressed in an online review and discrete emotions. Although previous studies found that perceived reviewer rationality can mediate the effect between expressed negative emotions and helpfulness (Folse et al.,

2016; Kim & Gupta, 2012), this study found that this is not always the case. The mediation effect depends on fairness appraisals of perceived emotions. Including this factor in the model enhanced understanding of the factors affecting perceived helpfulness. Also, it was investigated that emotions do not always influence perceived reviewer rationality; it depends on the type of review and type of emotion. Understanding which factors influence perceived reviewer rationality is important as it influences the perceived helpfulness of online reviews. As a result, the findings contributed to attribution theory.

A further theoretical contribution of the study is that it tested how emotions influence perceived helpfulness of online reviews in both a service and product context. Most of the previous studies on emotions researched helpfulness just in the context of product reviews or seller reviews (Ahmad & Laroshe, 2015; Folse et al., 2016; Kim & Gupta, 2012). However, testing it in the context of service online reviews is important, as people evaluate them differently due to the intangible nature and hence can be perceived more uncertain for decision-making (Urbany et al., 1989). By comparing factors affecting helpfulness of product and service reviews it was found that perceived rationality does not mediate the effect of emotions on helpfulness in the case of product reviews, while it mediates in the case of service reviews (for expressed regret). Additionally, it was found that price fairness and reviewer rationality are sequential mediators between discrete emotions and review helpfulness in the case of product reviews. As a result, this study showed that people process the context of product and service reviews in different ways which adds knowledge to the theory of information processing.

## **6.2 Practical implications**

The results of this study have important implications for digital marketing managers and platform administrators. Marketers in companies that publish online consumer reviews must

ensure that the quality of the reviews on their website is high. Nowadays, most of the e-commerce websites and opinion platforms (e.g. Epinions.com, Amazon.com, Tripadvisor.com) offer general guidance about how to write online reviews. Applying the results from this study, platform administrators can use the findings to make their website more user-friendly, by developing writing guidelines which will encourage more useful product and service reviews. For instance, the admonition “Do not use offensive language or content” is well used by sites for reviewer instructions. While the intention is to maintain decorum, this guideline is also consistent with the implication of this study regarding frustration. Review platforms cannot expect writers to express specific emotions in online reviews; however, they may propose the reviewer expresses how they feel, but think with caution about their tone and content, by taking into consideration a future reader of this review. Also, writers can be provided with special emotions to include in their reviews and some information about price fairness. Also, when suggesting guidelines for writing helpful reviews, the platform administrator can propose different guidelines for writing product and service reviews. As this research found, regret expressed in the service review influences perceived reviewer rationality which in turn influences perceived review helpfulness. However, frustration in both product and service reviews does not influence perceived rationality of the reviews and negatively influences perceived helpfulness. Also, it was found that perceived reviewer rationality positively influences the helpfulness of the reviews. As a result, guidelines can advise writing reviews that have more rationality and are more reasonable.

One of the motivations for writing online reviews is the desire to help future customers by providing helpful information about a seller, product, service, or transaction (Bronner and De Hoog, 2011). This research observed that a frustration-embedded review is perceived as less helpful than a regret-embedded review, even if the substantive content of the review is held

constant. Thus, frustrated reviews about a bad experience can be counterproductive for reviewers seeking to affect the choices of other customers. Instead, reviewers who are not satisfied with the product/service would be advised to either avoid explicit expressions of frustration or, alternatively, provide particularly informative content to counteract its negative effect on helpfulness.

Additionally, as some discrete emotions are considered more helpful than others, reviews expressing fairness emotions should be brought upfront on a website, so readers can see them first. As a result, it will help readers make more informed purchase decisions more quickly and avoid information overload. It will also increase the effectiveness of the review website. Findings from this research can help organizers of online communities better manage their website by providing helpful reviews first, which would help them to attract a greater number of users.

Also, there is evidence that managers sometimes edit eWOM communications in order to decrease personal attacks and deal with foul language. However, based on the results it is suggested that managers should not edit emotions as it will lead to a decrease in information helpfulness. Also, fairness emotions should even be encouraged as they provide additional information such as price fairness and/or reviewer rationality.

Different studies have explored the helpfulness of product reviews and provided implications for manufacturers and retailers (Chevalier & Mayzlin, 2006; Forman et al., 2008; Mudambi & Schuff, 2010; Yin et al., 2014). This work is focusing on product and service reviews. Organisations are aware of the need to deal with negative reviews in a proactive way (van Noort and Willemsen, 2011). Also, many third-party sites provide a mechanism which allows companies to respond immediately to reviews (e.g. TripAdvisor). Assuming that companies seek to identify and respond to negative reviews which are especially influential, it may often

be assumed that frustration reviews deserve particular attention (Kohler et al., 2011; van Noort and Willemsen, 2011). Nevertheless, the findings of this research propose that this intuition is wrong, as frustration reviews are discounted by readers due to their embedded emotion. In contrast, reviews which express regret should be a more urgent concern for companies. Thus, response strategies for reviews expressing different emotions should be different. Future research should investigate which response strategies companies should apply when replying to reviews expressing regret and frustration.

## **7. Conclusion**

The aim of this research was to examine how discrete emotions embedded in online reviews affect perceived helpfulness. Applying cognitive appraisal theory, the study investigated how different emotions of the same valence, such as frustration and regret, influence consumer judgment (Lerner & Keltner, 2000). Through experimental studies it was found that regret has a positive effect on helpfulness of both product and service reviews, while frustration has a negative effect. It was also observed that expressed price fairness mediates the relationships between emotions and review helpfulness.

Investigating the impact of emotions on perceived helpfulness of the review is important for marketers. Understanding how some emotions can lead to a review being perceived as more helpful will aid the development of more effective retail websites, as more helpful online reviews will be displayed first helping alleviate information overload. Also, knowledge about review emotions can help managers to improve attitudes towards products and brands, and so increase sales. This research advances current understanding of the role of emotions in an information-seeking situation and leads to a richer understanding of the characteristics that review readers consider helpful during the decision-making process.

### **7.1 Limitations and directions for future research**

Despite its contributions this study is not without limitations, and these limitations provide fruitful avenues for further research. Firstly, there is an opportunity to further understand information processing. The current study considered two negative emotions of regret and frustration. However, these emotions are different in appraisals of agency (Roseman, 1991). As a result, future studies should empirically investigate how agency appraisal of emotions could influence helpfulness of online reviews. As this research focused on only one dimension of fairness (price fairness), future studies can consider other dimensions such as distributive fairness, procedural fairness, and interactional fairness, or a combination of these as suggested by Watson and Spence (2007). Furthermore, this study did not consider any reviewer related variables, which may moderate the effect of emotions. Hence, future research can consider the role of variables such as reviewer expertise, propensity to trust, and involvement.

In terms of method, this study employed an experimental approach to test the effect of different emotions on perceptions of helpfulness. Additionally, this study used a convenient sampling method, thus the sample could not be treated as representative of all UK consumers. Future research should conduct a field study, such as using real helpfulness votes of reviews from Amazon.com or TripAdvisor.com. Previous studies suggest that such an approach will enhance the generalizability and validity of the findings (Ahmad & Laroche 2015, Yin et al 2014). However, it is not recommended to exclusively adopt such an approach as in this case review helpfulness is measured only by those consumers who engage in this behavior, thus findings may not be generalizable to review readers who do not vote on review helpfulness (Baek et al., 2012).



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## Appendix

### Summary of stimuli

Condition	Review content
Control, product review	This camera takes a long time to get used to, so it is not straight-forward to use. The automatic focus is pretty bad, the battery takes a long time to charge up and the camera loses battery quite quickly. Price is low and quality is poor.
Frustration, product review	This camera takes a long time to get used to, so it is not straight-forward to use. The automatic focus is pretty bad, the battery takes a long time to charge up and the camera loses battery quite quickly. Even though the price is low, the quality is poor. I am really frustrated with this camera.
Regret, product review	This camera takes a long time to get used to, so it is not straight-forward to use. The automatic focus is pretty bad, the battery takes a long time to charge up and the camera loses battery quite quickly. Quality is poor, but you get what you paid for, the price was low. I regret that I bought it.
Control, service review	It was my first time in this restaurant. I won't be back. It took so long to get served, the steak was overcooked and service was slow. It took a long time to get an order placed so I had to go looking for someone. Food was tasteless and not overly warm. The price is low and the quality of food and service is poor.
Frustration, service review	It was my first time in this restaurant. I won't be back. It took so long to get served, the steak was overcooked and service was slow. It took a long time to get an order placed so I had to go looking for someone. Food was tasteless and not overly warm. Even though the price is low, the quality of food and service is very poor. I left feeling frustrated.
Regret, service review	It was my first time in this restaurant. I won't be back. It took so long to get served, the steak was overcooked and service was slow. It took a long time to get an order placed so I had to go looking for someone. Food was tasteless and not overly warm. The quality of food and service was poor, but you get what you paid for, the price was low. I regret that I chose this restaurant.